PUBLIC ABSTRACT

Applicant (primary) name: Tampa Electric Company

Applicant=s address: 702 North Franklin Street , Tampa, FL 33602
Street City State Zipcode

Team Members (if any): Mitsui Babcock
(listing represents only participants at time of application, not necessarily final team membership)
Name City State Zipcode

BOC
Name City State Zipcode

Name City State Zipcode

(Use continuation sheet if needed.)

Proposal Title: NOX Removal and Reduction Project for Coal-Fired Power Plants

Commercial Application: **9** New Facilities XX Existing Facilities

9 Other, Specify: _____

Technology Type: Mitsui Babcock Selective Autocatalytic Reduction and BOC LoTOx

Estimated total cost of project:
(May not represent final negotiated costs.)

Total Estimated Cost: $ 94,877,698

Estimated DOE Share: $ 37,951,079

Estimated Private Share: $ 56,926,619

PUBLIC ABSTRACT (cont=d)

Anticipated Project Site(s) Tampa Electric Polk Station, Apollo Beach, FL
Location (city, county, etc.) State Zipcode

Location (city, county, etc.) State Zipcode

Location (city, county, etc.) State Zipcode

Type of coal to be used: _____ _____
Primary Alternate (if any)

Size or scale of project:

Tons of coal/day input

And/or

_____ Megawatts, Barrels per day, etc.
Other (if necessary)

Duration of proposed project: 36
(From date of award) (Months)

PRIMARY CONTACT:
For additional information, Robert N. Howell
interested parties should contact: Name

Manager Project Controls
Position

(813) 228-1932
Telephone Number

Tampa Electric Compans
Company

rnhowell@tecoenergy.com
e-mail address

As Above
Address

City State Zipcode

Alternative Contact:

Name

Position

( )
Telephone Number

Company

e-mail address

Address

City State Zipcode

PUBLIC ABSTRACT (cont=d)

Brief description of project:

Cost effective generation of electricity is vital to the economic growth and stability of this nation. To accomplish this goal a balanced portfolio of fuel sources must be maintained and established which not only addresses the cost conversion of these energy sources to electricity, but also does so in an efficient and environmentally sound manner.

Conversion of coal as an energy source to produce steam for a variety of systems has been a cornerstone of modern industry and is projected to be for future years. However, the use of coal in combustion systems has traditionally produced unacceptable levels of gaseous and particulate emissions, albeit that recent combustion, removal, and mitigation techniques have drastically reduced these levels.

Acid rain and increased formation of ground level ozone have been associated with excessively high levels of nitrogen oxides, (NOx) being released into the atmosphere. The Clean Air Act of 1990, and the current Clear Skies initiative instituted several proactive requirements aimed at the electric generation industry to significantly reduce gaseous emissions, and in particular NOx and mercury emissions. As regulated emissions for NOx continue to become increasing stringent in an effort to obtain ultra low levels, the options available to this industry have not kept pace and currently remain limited. The vast majority of NOx reduction technologies involve combustion modifications, through the use of burners, advanced air staging systems, fuel switch, neural networks, and co-firing techniques. There are currently a few electric power generating facilities which have obtained NOx emissions in the 0.10-0.15 lbs/MMBtu range, but these are the exception to the rule. These units are of a specific design which allow for deep combustion staging and fire specific fuel supplies.

Unfortunately, there exist many coal-fired facilities which must rely upon other technologies in conjunction with combustion modifications to meet new regulated limits. Selective Catalytic Reduction, (SCR) has traditionally been the only proven and reliable means to obtain low NOx emission levels. This technology involves the injection of ammonia downstream of the combustion zone and the use of a catalyst bed which is located immediately at the boiler outlet and ahead of the air preheater to remove NOx. Whereas, the technology appears straightforward it requires substantial effort and cost to install and operate. One such problem that is often encountered is the need to install either upgraded or new induced draft fans to overcome the increase in pressure drop due to the catalyst bed. In addition, large quantities of ammonia are required for this process and ammonia slips of 2-5 ppm are not uncommon.

Due to Tampa Electric's desire to obtain NOx emission levels of 0.10 lbs/MMBtu or less and to avoid the inherent problems associated with SCR installations and it's operation, Tampa Electric investigated various technologies to achieve ultra low levels of NOx emissions. The two technologies, which could provide significant benefit through their synergistic use, involve the Mitsui Babcock Selective Autocatalytic Reduction, (SACR) technology, and the BOC LoTOx system. The SACR process involves the injection of ammonia and natural gas in specific regions of the boiler for initial NOx reductions. Furthermore, it can be designed, installed and operational much faster than SCR's and don't require extensive modifications to the boiler. The LoTOx system will inject ozone at the inlet of the existing FGD to remove the balance of the requisite NOx from the flue gas stream and also aid in removal of mercury. The process includes an air separation plant and ozone generators. The capital cost for this system may be 75% -85% of a SCR and its operational and maintenance cost less depending upon site specific considerations.